UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,265	07/29/2003	Claire-Sabine Randriamasy	Q76542	4726

23373 7590 03/21/2007
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER
YUEN, KAN

ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/628,265	RANDRIAMASY ET AL.
	Examiner	Art Unit	
	Kan Yuen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07/29/2003</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-40</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-40</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>29 July 2003</u> is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>07/29/2003</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

Detailed Action

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Note:

2.   In claims 20-22, 24-29, and 34, note that claim scope is not limited by claim

language that suggests or makes optional but does not require steps to be performed,

or by claim language that does not limit a claim to a particular structure, such as by

using the term " capable of " or "adapted to". Therefore, claim language following this

phrase will not be considered.

All the limitations appear inside the parenthesis will not be considered as part of

the limitation.

Drawing Objections

3.   The drawings are objected to under 37 CFR 1.83(a) because they fail to show

the labels in Fig. 1, as described in the specification. Any structural detail that is

essential for a proper understanding of the disclosed invention should be shown in the

drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR

1.121(d) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures

appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2.   In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Specification Objections

4.   The disclosure is objected to because of the following informalities: The title

should be included in the specification e.g. Background of the Invention, Summary of

the Invention.

Applicant is suggested to provide additional definition of the terms "path color

restriction", "weakly non-dominated", and "Penalty" in the specification.

Appropriate correction is required.

Claim Objections

5.   Claims 1-40 are objected to because of the following informalities:

In claims 1 and 20, it is suggested the applicant to remove all the notations

representing the terms such as departure node, arrival node, ideal solution, and etc.

In claim 29, the term "a value of interest" seems to refer back to the same term in

claim 20, line 8. If this is true, it is suggested to changed the term "a value of interest" to

"the value of interest".

Claims 2-19, and 21-40 are objected to, because they are depending on claims 1

and 20.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

In claim 1, lines 11 and 12, the variable "K" is considered vague and indefinite,

because the variable is undefined. Similar problem exist in claim 20, lines 11 and 12.

Also in claim 1, line 11, the term "the k best classified paths" has no antecedent basis.

Similar problem exist in claim 20, line 11.

In claim 4, line 2, the term "the non-additive type" has no antecedent basis.

Similar problem exist in claim 23, lines 2.

In claim 9, lines 1-2, the terms "the best performance value" and "the optimum

value", respectively have no antecedent basis. Similar problem exist in claim 28.

In claim 11, line 2, the term "the k lowest values of interest" has no antecedent

basis. Similar problem exist in claim 30, line 2.

In claim 12, line 2, the term "the minimum bandwidth" has no antecedent basis.

Similar problem exist in claim 31, line 2.

In claim 13, line 2, the term "the available bandwidth" has no antecedent basis.

In claim 13, line 3, the term "the path" is lack of antecedent basis, because there

are many possible paths. Similar problem exist in claims 14-16.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

Claims 1-4, 8, 9, 12, 13, 17-23, 27, 28, 31, 32, 36-40 are rejected under 35

U.S.C. 102(e) as being anticipated by Izmailov et al. (Pub No.: 2003/0058797).

In claims 1 and 20, Izmailov et al. disclosed the method of determining data

routing paths in a communication network including a multiplicity of nodes (Nn), which

method is characterized in that it includes the following steps: a) ensuring that at least a

portion of the multiplicity of nodes (Nn) are connected (see Fig. 7), b) for the nodes of

the portion, calculating possible paths (r*) between a departure node (Ns) and an arrival

node (Nt), allowing for at least two chosen criteria, and then deducing an ideal solution

(Z()) from performances (Z(r*)) of the possible paths (r*) based on the criteria (see

column 0039, lines 11-30), c) assigning each possible path (r*) a value of interest (U(r))

allowing for the ideal solution (Z()), and then classifying the possible paths allowing for

their respective values of interest (see column 0055, and see Table 1), and d) selecting

from the classified possible paths the k best classified paths, in order to route data via

one of the k paths (see column 0039, lines 1-10), as recited in claims 1 and 20. As disclosed in the reference a method to calculate a optimal path. It selects a non-selected class from a plurality of differentiated service classes (see Table 1 in paragraph 0055), that have criteria stated in the Performance Bounds column. Therefore, it can be interpreted as assigning a value of interest in the possible paths that meets the criteria.

Regarding to claims 2 and 21, characterized in that step a) begins by determining from the multiplicity of nodes (Nn) all the pairs of nodes (see Fig. 7) that can establish between them an oriented link each supporting at least one chosen local constraint, after which it is ensured that all the nodes of the pairs are connected (see column 0071, lines 1-20). As disclosed in the reference, all paths must meet the bandwidth availability requirements, and to calculate the shortest path and a number of hops in the shortest path.

Regarding to claims 3 and 22, characterized in that at the end of step b) there are retained from the possible paths (r*) those that each satisfy at least one chosen global constraint so that in step c) values of interest (U(r)) are assigned to the retained possible paths (r*) (see column 0039, lines 11-30). As disclosed in the reference, all paths must meet the bandwidth availability requirements, and to calculate the shortest path and a number of hops in the shortest path.

Regarding to claims 4 and 23, characterized in that at least one of the criteria is of the non-additive type (see column 0039, lines 11-30). As mentioned in the specification, non-additive type can be a bandwidth requirement.

Regarding to claims 8 and 27, characterized in that in step b) representative values $(Z(r))$ of its "performance" are determined for each path with respect to each of the chosen criteria and a path (r) for which the performance values $(Z(r))$ are "non-dominated" is qualified as a possible path (r^*) (see column 0039, lines 11-30). As discussed in the reference, all the pre-selected paths are qualified for certain criteria.

Regarding to claims 9 and 28, characterized in that in step b) the best performance value $(Z^*(r))$ observed over the possible paths, referred to as the "optimum value", is determined for each criterion and the ideal solution is then constructed in the form of a multiplet of components constituted of the various optimum values thus determined (see column 0039, lines 11-30). In the reference, Backtracking algorithm is used to determine an optimal path. Backtracking algorithm using refinement technique which computes using relevant values of the constraints in the system to find the optimal path.

Regarding to claims 12 and 31, characterized in that the local and/or global constraints are selected from a group comprising at least the minimum bandwidth required, the maximum length of the path, the maximum duration of the path, at least one prohibited link, the maximum number of hops on the path, and a path color restriction (see column 0039, lines 11-30).

Regarding to claims 13 and 32, characterized in that the criteria are selected from a group comprising at least the available bandwidth (C2), the number of hops on the path (C3), and the duration of the path (C1) (see column 0039, lines 11-30).

Regarding to claims 17 and 36, characterized in that the criteria are chosen as a function of the type of service required (see column 0053, lines 1-10 and see Table 1).

Regarding to claims 18 and 37, characterized in that the chosen criteria are weighted as a function of their importance in the light of management information (see column 0039, lines 1-30 and see Table 1). As shown in the Table 1, the criteria are used corresponding to the certain application used.

Regarding to claims 19 and 38, characterized in that the constraints and their associated values are chosen as a function of the quality of service required (see column 0053, lines 1-11).

Regarding to claim 39, the method is in IP communication networks (see column 0071, lines 1-9).

Regarding to claim 40, the method with link state routing protocols supporting TE-LSA traffic management (see column 0028, lines 1-7). As in the reference, QOSPF protocol is used.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness

under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 5, 6, 24 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable

over Izmailov et al. (Pub No.: 2003/0058797), in view of Gunluk (Pat No.: 7023806).

For claims 6 and 25, Izmailov et al. disclosed the methods of characterized in

that in step b), during the procedure of eliminating the partial paths, there are retained

solutions that are "weakly non-dominated" on the non-additive criterion (see column

0039, lines 11-30). As disclosed in the reference, Backstracking algorithm is used to

eliminate certain solutions that do not meet the criteria, and moreover, it retains certain

alternative solutions.

However, Izmailov et al. did not disclose the methods of integrates a trace storing

a route corresponding to a partial path, in order to detect and prevent cycles in the

paths under construction.

Gunluk from the same or similar fields of endeavor teaches the use of integrates

a trace storing a route corresponding to a partial path, in order to detect and prevent

cycles in the paths under construction (see column 9, lines 43-60). The motivation for

using the method as taught by Gunluk in the network of Izmailov et al. being that it

stores alternative paths in the memory.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 7 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Izmailov et al. (Pub No.: 2003/0058797), in view of Khotimsky et al. (Pat No.: 6646989).

For claims 7 and 26, Izmailov et al. disclosed all the subject matter of the claimed

invention with the exception of characterized in that connectivity is verified by a

mechanism of propagation from the departure node (Ns) to all the other nodes (Nn) of

the multiplicity of nodes, so that each node (Nn) is visited.

Khotimsky et al. from the same or similar fields of endeavor teaches the method

of characterized in that connectivity is verified by a mechanism of propagation from the

departure node (Ns) to all the other nodes (Nn) of the multiplicity of nodes, so that each

node (Nn) is visited (see column 7, lines 27-45). The motivation for using the method as

taught by Khotimsky et al. in the network of Izmailov et al. being that it ensure all nodes

are accessible when finding the possible paths.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 14-16 and 33-35 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Izmailov et al. (Pub No.: 2003/0058797), in view of Fabre et al. (Pub

No.: 2003/0021233).

For claims 15, 16, 34 and 35, Izmailov et al. disclosed all the subject matter of

the claimed invention with the exception of of characterized in that in step b) the

criterion relating to the duration of the path (C1) is impacted by a penalty, as recited in

claims 15, and 34. Characterized in that the penalty applies to the administration cost

(CA) of the path, as recited in claims 16 and 35. The method of characterized in that the

chosen criteria used in step b) comprise the available bandwidth (C2) and the duration

of the path (C1), as recited in claims 14, and 33.

Fabre et al. from the same of similar fields of endeavor teaches the method of

characterized in that the chosen criteria used in step b) comprise the available

bandwidth (C2) and the duration of the path (C1) (see paragraph 0042, lines 1-6). The

motivation for using the methods as taught by Fabre et al. in the network of Izmailov et

al. being that the transmission time (duration) and available bandwidth of a path can

greatly affect the result of optimal path determination.

Fabre et al. also teaches the methods of characterized in that in step b) the

criterion relating to the duration of the path (C1) is impacted by a penalty (see column

0039, lines 1-6), as recited in claims 15, and 34, and method of characterized in that the

penalty applies to the administration cost (CA) of the path (see column 0039, lines 1-6),

as recited in claims 16 and 35. The motivation for using the methods as taught by Fabre

et al. in the network of Izmailov et al. being that the least transmission cost of a path can

greatly affect the result of optimal path determination.

Allowable Subject Matter

11.   Claims 10, 11 29 and 30 would be allowable if rewritten to overcome the

rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to

include all of the limitations of the base claim and any intervening claims. The prior art

failed to teach the method of characterized in that in step c) the value of interest (U(r))

assigned to each possible path (r) characterizes the greatest value of the components

associated with the various chosen criteria of a weighted Tchebychev function of

differences between the performance of the possible path (r*) and the corresponding

optimum value of the ideal solution, as recited in claim 10, and 29.

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Srikrishna et al. (Pub No.: 2004/0264379), Chari et al. (Pat No.:

6704301), and Jaber et al. (Pub No.: 2002/0006112), are show systems which

considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kan Yuen whose telephone number is 571-270-2413.

The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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RICKY Q. NGO
SUPERVISORY PATENT EXAMINER